

The NC Truck network model also represents a foundation for a statewide multimodal network including passenger vehicles, trucks, rail, air, inland water way, and marine port operations. Estimate freight transportation flows and transfers between modes is a particularly important multimodal issue because of its connection to NC commerce and economic development. Future versions of the model should start with rail connections at inland and marine ports.

Network Improvements

There are several network model issues that should be addressed in the future.

- The NC truck network prototype uses the National Highway Planning Network to be consistent with the FHWA FAF2 data adapted for the research. The NHPN is relatively coarse, and the resulting NC truck network model lacks local roads and streets which are important links for local truck dispatch and deliveries.
- The NCDOT uses the National Highway System (NHS) network.
- The NC truck network model is consistent with the network of highways in 2005.

These issues can be resolved in future North Carolina truck network models as more network links are added, perhaps by using the NCDOT Universe File and line work, to include up-to-date highway improvement projects like bypasses and highway widenings (lane additions).

During network model development within North Carolina the automatic centroid connector function was used to generate centroid connector links. Future model improvements should more carefully examine centroid connectors and include known truck routes, links to large truck generators, and additional centroid connectors within highly active metro TAZs.

Network Link Speeds

Speed limit data for Interstate and US routes outside North Carolina were not available, so an assumption of a 55 mi/hr speed limit for trucks on US routes and a 70 mi/hr speed limit for Interstate routes was made for all the non-North Carolina routes. For all the North Carolina metro TAZs, a speed limit of 35 mi/hr is assumed. For all the centroid connectors in the buffer and North Carolina rural TAZs, a speed limit of 45 mi/hr is assumed. For all the centroid connectors in the BEA zones, a speed limit of 55 mi/hr is assumed. This approach for setting link speeds is efficient and common practice in national networks that focus on a particular state. However, refinements and other approaches to setting link speed are of interest in future versions of the NC truck network model.

Truck Origin-Destination Data

For the NC truck model the following adjustments were made based on employment: (1) aggregation of trip interchanges for TAZs in the BEA zones, and (2) disaggregation of trip interchanges for TAZs in North Carolina metro areas. The result including U.S. BEA zones, buffer counties beyond the NC state line, and NC rural and metro counties was a 357x357 OD matrix for the NC truck network. The advantage of making adjustments to the FHWA FAF2 synthetic OD county data is that it was available at no cost. However adjusting synthetic OD data involves some level of uncertainty. In addition, the synthetic OD data itself represents a disaggregation of national data to county level OD data. Thus, for future projects it is recommended that NC specific Global Insight Transearch data be purchased. Since the cost of the data is expensive, arrangements should be made to share it with other NC state agencies like the NC Department of Commerce, which may already have access to such data.

The current network model and OD flows only estimate truck traffic, yet intermodal connections and flows are vitally important to North Carolina commerce and resulting economic development. Thus, any purchased data should include intermodal flows.